

<p><b>2005-039334/04</b></p> <p>BASF AG 2003.05.16 2003-1022266(+2003DE-1022266) (2004.11.25) C08G 18/08, 18/24, 18/42, 18/48, 18/66, 18/75</p> <p><b>Aqueous primary polyurethane dispersion, used e.g. for coating or impregnation, polymerization seed or film, molding or hydrogel production, is based on polyisocyanate and polyol with ethyleneoxy units</b></p> <p>C2005-013060 N(AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LY MA MD MG MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW) R(AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW)</p> <p>Addnl. Data: LICHT U, DEUTRICH S, RINK H, LOECKEN W 2004.05.06 2004WO-EP004819</p>	<p><b>BADI 2003.05.16</b></p> <p>*WO 2004101638-A1</p>	<p><b>A(5-G1B)</b></p> <p>by reacting (a) polyisocyanate, (b1) polyol with ethyleneoxy unit(s) (EO) from (poly)ethylene glycol and/or ethylene oxide and optionally (b2) other polyol, (b3) compound with <math>\leq 2</math> isocyanate (NCO)-reactive groups, (b4) monomer with 1 NCO-reactive group and (c) (potentially) ionic component, the EO fraction is 10-90 wt.% with respect to (b1) and <math>\leq 3</math> wt.% with respect to all (a+b+c).</p>
<p><b>DETAILED DESCRIPTION</b></p> <p>In aqueous primary dispersions containing polyurethane(s) obtained by reacting (a) polyisocyanate(s), (b1) polyol(s) with one or more ethyleneoxy (EO) unit(s) -[CH<sub>2</sub>-CH<sub>2</sub>-O-]- originating from ethylene glycol, polyethylene glycol of molecular weight 106-2000 and/or ethylene oxide, (b2) optionally different polyol(s), (b3) optionally compound(s) with <math>\leq 2</math> isocyanate (NCO)-reactive groups, selected from thiol and primary and secondary amino groups, (b4) optionally monofunctional monomer(s) with an NCO-reactive group and (c) optionally (potentially) ionic component(s), the</p>		<p>[WO 2004101638-A+</p>

novelty is that the fraction of EO units (44 g/mole) is 10-90 wt. % with respect to polyol (b1) and < 3 wt. % with respect to the sum of all components  
(a) + (b1) + (b2) + (b3) + (b4) + (c).

INDEPENDENT CLAIMS are also included for the following:

- (1) production of the primary dispersion by reacting the components in the presence of water; and
- (2) production by dispersion with shear forces under  $10^8 \text{ W/cm}^3$ .

#### USE

The dispersion is used in aqueous coating compositions, adhesives and sealants, for coating wood, wood veneer, paper, board, cardboard, textiles, leather, nonwovens, plastics surfaces, glass, ceramics, mineral building materials, metals or coated metals; in the production of films or foils; for impregnating textiles or leather; as dispersant, pigment grinding medium, primer, adhesion promoter, waterproofing agent, laundry detergent additive or additive in cosmetic formulations (all claimed). It is also useful as seed in seed polymerization (claimed), e.g. in situ seed; and for producing moldings or hydrogels (claimed), e.g. optical lenses.

#### ADVANTAGE

The finely-divided primary dispersions containing polyurethane can be produced without using high shear forces and make it possible to produce raw materials forming fine emulsions and dispersible products. The energy input for producing the emulsion need not exceed  $10^8 \text{ W/m}^3$ .

#### EXAMPLE

9.5 g block copolymer or propylene oxide (PO) and ethylene oxide (EO) (terminal) with 21.3 wt. % EO and hydroxyl (OH) number 26.7 mg KOH/g (to DIN 53240) were mixed with 1.07 g 3-methyl-pentan-1,5-diol and 2.5 g isophorone diisocyanate. The oil phase was stirred into 28.8 g deionized water containing 3.4 g Steinapol NLS (RTM; 15%) with a magnetic stirrer at 75- rpm. The mixture was homogeneous after 10 minutes. The emulsion was heated to 50°C and treated with 2 drops dibutyl-tin dilaurate. After 5 hours, it was passed through a 40  $\mu\text{m}$  filter. The solids content was 28.8% and particle size 35.5 nm.

#### TECHNOLOGY FOCUS

Polymers - Preferred Polyols: Polyol (b1) has a molecular weight of < 500 g/mole. It may be a copolymer, especially block copolymer,

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containing ethylene oxide and propylene oxide, preferably with at least one terminal -CH<sub>2</sub>-O-H structural unit; or a polyesterol. Preferred Dispersion: The average particle size is under 100 nm, measured by means of a Malvern Autosizer 2 C (RTM).  
(28ppDwgNo.0/0)

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